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(54) **Lift arrangement for lateral aircraft surfaces**

(57) Lifting arrangement for lateral aircraft surfaces that consists of numerous lateral flutings, grooves, flutes or riblets parallel to each other, arranged on the lateral surfaces of fuselages, fin units, pylons and gondolas of

aircraft with a downward slope from the nose to the tail, with the flow of air passing through such flutings, grooves, etc., towards the rear and downwards, generating lifting by reaction, using small planes or fins to support the engines and flight control fins.

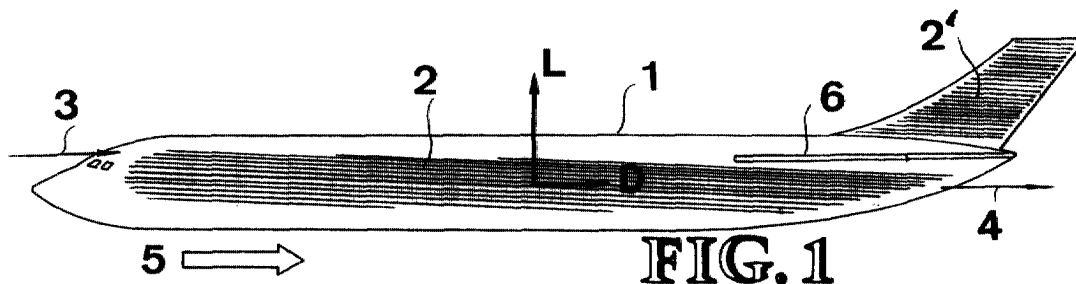


FIG. 1

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Description**FIELD OF THE INVENTION.**

[0001] On lateral surfaces of fuselages, fin units, pylons and gondolas of aircraft.

DESCRIPTION OF THE RELATED ART.

[0002] The lateral surfaces of existing aircraft are smooth, and if they are wave-shaped, they are parallel to the centre line of the aircraft and, as a result, do not produce a lifting effect.

DESCRIPTION OF THE INVENTION.

[0003] The lifting arrangement for lateral aircraft surfaces consists of lateral flutings, grooves, splines, flutes or riblets parallel to each other, arranged on the lateral surfaces of fuselages, fin units, pylons and gondolas of aircraft with a downward slope from the nose to the tail, with the flow of air passing through such flutings, grooves, etc., towards the rear and downwards, generating lifting by reaction.

[0004] The flutings, grooves, etc., can be straight or curved with their convexity in an upward direction.

[0005] The front area of the flutings, grooves, etc., can have a negative or upward slope from the nose up to approximately one-fifth of the length of the flutings, grooves, etc.

[0006] The horizontal tail assemblies should be larger.

[0007] They can also use a number of small planes or fins to support the engines and flight control fins.

[0008] In a variant of the invention, part of the lift is obtained by means of the wings and the rest by means of the flutings, grooves, etc.

[0009] The flutings and grooves can be rounded or wave-shaped or with flanges or edges or sawtooths, horizontal or sloped upwards or downwards.

[0010] In a variation of the invention, the flutings, grooves, etc., are arranged in several stretches in series.

[0011] The total drag to forward movement is less than that of aircraft with wings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] Figures 1 through 7 show partial side schematic views of different fuselages with the lifting arrangement of the invention.

[0013] Figures 8 through 12 show schematic different cross-section views with the lifting arrangement of the invention.

DETAILED DESCRIPTION OF THE INVENTION**LIST OF REFERENCE NUMERALS**

[0014] The drawing shows: the fuselage (1), the flutings, grooves, etc., (2 and 2'), the input of a portion of the flow (3), and its output (4), the relative air flow (5), the horizontal stabilizer (6), the fin unit (7), the small plane or fin (8) and the front of the flutings, grooves, etc., (9) with a negative or upward slope from the nose up to approximately one-fifth of the length of the flutings, grooves, etc.

[0015] Figure 1 shows an aircraft whose fuselage has lateral flutings, grooves, etc., (2) of the straight type, where the air arrives at the area (3) of the flutings, grooves, etc., zone and descends leaving the area 4, having the fluting, grooves, etc., a downward slope from the nose to the tail, with the flow of air passing through such flutings, grooves, etc., towards the rear and downwards, generating lifting **L** by reaction and the induced drag **D**.

[0016] Figure 2 shows an aircraft whose fuselage has flutings, grooves, etc., of the curved type with the front of the flutings, grooves, etc., (9) with a negative or upward slope from the nose up to approximately one-fifth of the length of the flutings or grooves.

[0017] Figure 3 shows a variant with the grooves of the curved type more spaced out.

[0018] Figure 4 shows another variant that adds the small plane or fin (8).

[0019] Figure 5 shows the grooves arranged in several stretches in series (2).

[0020] Figure 6 and 7 show two arrangements with a variant of fuselage.

[0021] Figure 8 shows the cross-section fuselage (1), with the rounded or wave-shaped grooves (2).

[0022] Figure 9 shows the cross-section fuselage (1), with the small flanges or edges, or sawtooths (2).

[0023] Figure 10 shows the cross-section fuselage (1), with the flanges, or sawtooths (2) sloped outwards and downwards.

[0024] Figure 11 shows the cross-section fuselage (1), with the flutings (2).

[0025] Figure 12 shows the cross-section fuselage (1), with the flanges (2) sloped outwards and upwards.

Claims

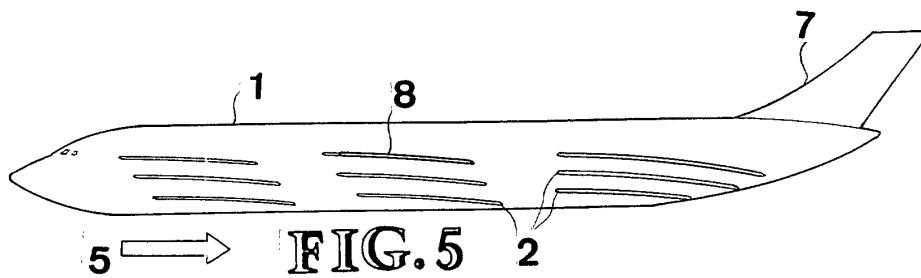
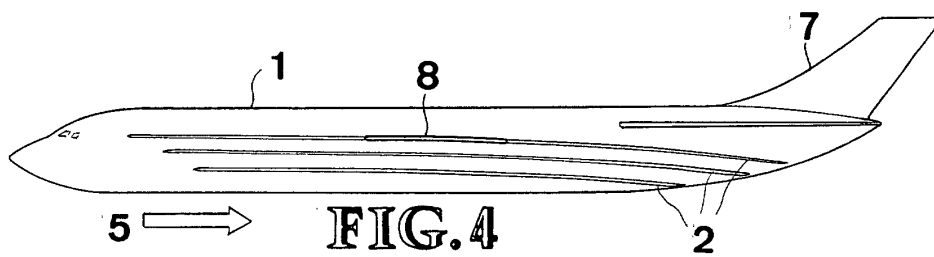
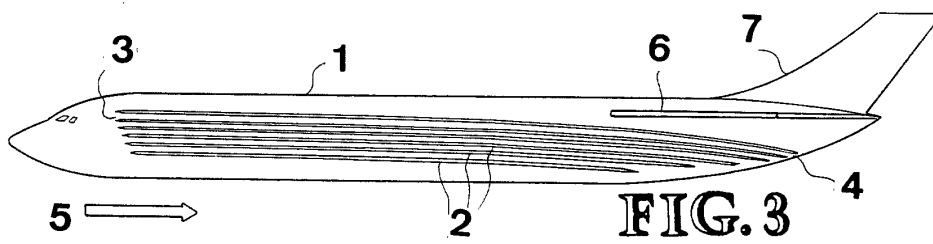
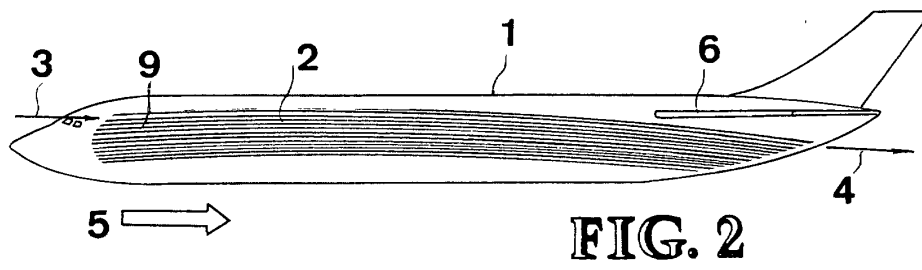
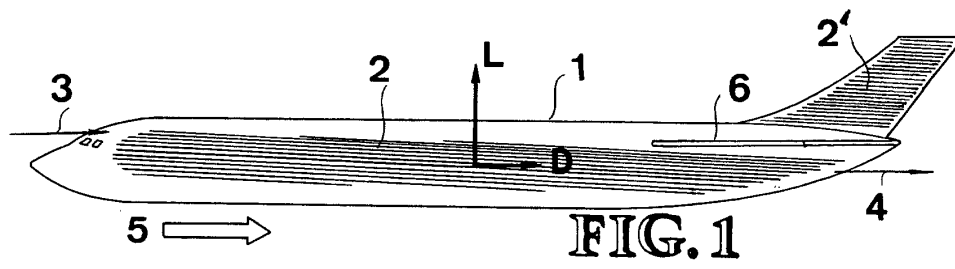
1. A lifting arrangement for lateral aircraft surfaces that consists of numerous lateral flutings, grooves, splines, flutes or riblets parallel to each other, arranged on the lateral surfaces of fuselages, fin units, pylons and gondolas of aircraft with a downward slope from the nose to the tail, with the flow of air passing through such flutings, grooves, etc., towards the rear and downwards, generating lifting by reaction, using small planes or fins.

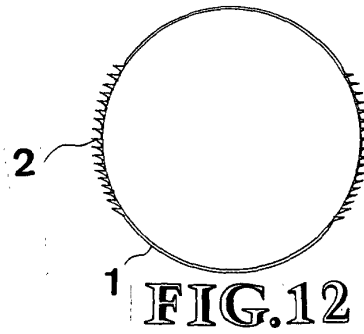
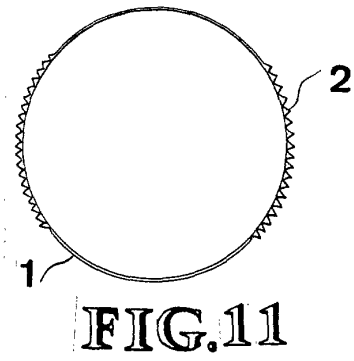
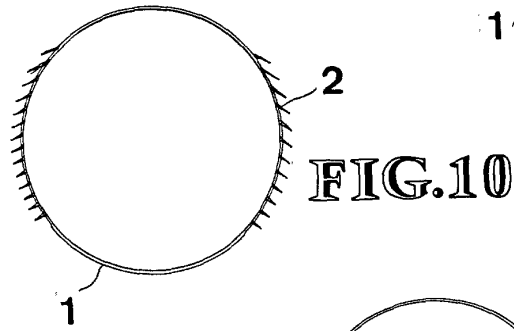
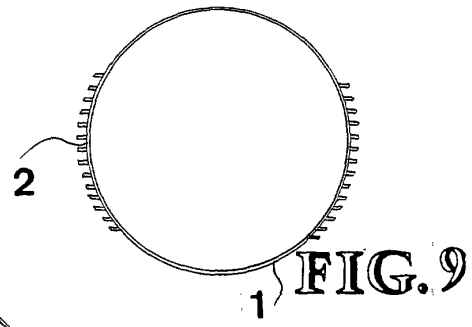
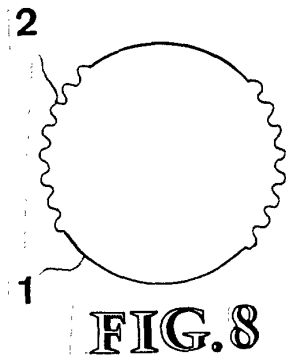
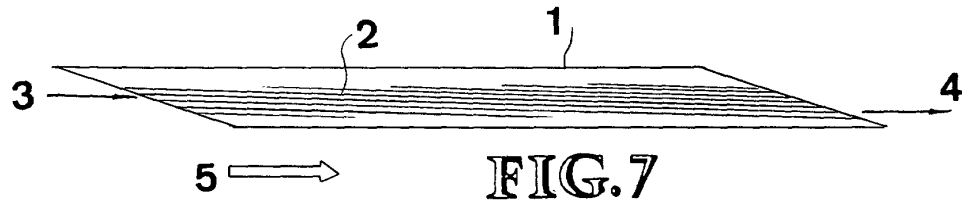
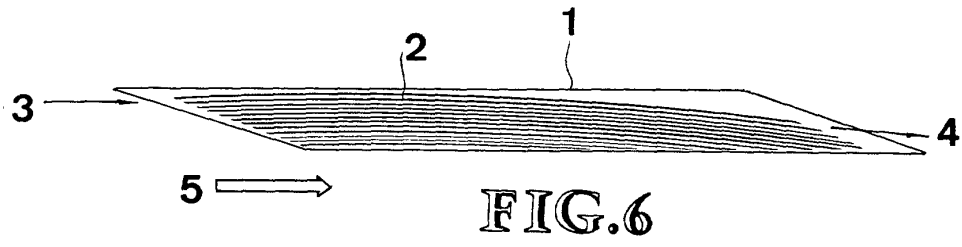
2. A lifting arrangement for lateral aircraft surfaces according to claim 1, wherein the flutings, grooves, etc., are straight.
3. A lifting arrangement for lateral aircraft surfaces according to claim 1, wherein the flutings, grooves, etc., are curved with their convexity in an upward direction. 5
4. A lifting arrangement for lateral aircraft surfaces according to claim 1, wherein the front area of the flutings, grooves, etc., have a negative or upward slope from the nose up to approximately one-fifth of the length of the flutings, grooves, etc. 10
5. A lifting arrangement for lateral aircraft surfaces according to claim 1, wherein part of the lift is obtained by means of the wings and the rest by means of the flutings, grooves, etc., said planes or fins support the engines and flight control fins. 15 20
6. A lifting arrangement for lateral aircraft surfaces according to claim 1, wherein the grooves are rounded or wave-shaped. 25
7. A lifting arrangement for lateral aircraft surfaces according to claim 1, wherein the flutings have horizontal flanges or edges or sawtooth.
8. A lifting arrangement for lateral aircraft surfaces according to claim 1, wherein the flutings have flanges or groves or sawtooth sloped upwards. 30
9. A lifting arrangement for lateral aircraft surfaces according to claim 1, wherein the flutings have flanges or grooves sawetooth sloped downwards. 35
10. A lifting arrangement for lateral aircraft surfaces according to claim 1, wherein the fluting, grooves, etc., are arranged in several stretches in series. 40

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EUROPEAN SEARCH REPORT

Application Number
EP 01 50 0196

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	US 3 385 538 A (HODGES ALGERNON F) 28 May 1968 (1968-05-28) * column 2, line 4-62 * * figures 1-3 *	1-4	B64C3/00 B64C39/08
A	DE 736 216 C (ERNST HEINKEL FLUGZEUGWERKE GMBH) 9 June 1943 (1943-06-09) * the whole document *	1-10	
A	US 4 708 305 A (WILSON JOHN C ET AL) 24 November 1987 (1987-11-24) * the whole document *	1-10	
A	DE 90 17 288 U (MOSER JOSEF) 28 November 1991 (1991-11-28) * page 3, line 9-21 * * figures 1-4 *	1-10	
A	FR 870 043 A (GOUVENAUX EMILE) 28 February 1942 (1942-02-28) * page 3, line 66 - page 5, line 22 * * figures 30,31 *	1-10	
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The present search report has been drawn up for all claims			
Place of search MUNICH		Date of completion of the search 21 November 2001	Examiner Pedersen, K
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document</p>			

EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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21-11-2001

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